

# IVV 27: Software Development

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## Purpose

The purpose of this system level procedure (SLP) is to:

1. Ensure compliance to NASA NPR 7150.2C.
2. Establish local responsibility for compliance.
3. Point to existing assets maintained by NASA and GSFC.

## Scope

This SLP applies to all software being developed for the IV&V Program.

## Process

Software Development Leads shall "develop, maintain, and execute software plans that cover the entire software life cycle and, as a minimum, address the requirements of this directive (NPR 7150.2C) with approved tailoring. [SWE-013]". These plans may be tailored to their respective development efforts (e.g. JSTAR, SWAT) and NASA NPR 7150.2C software classification, as software may be targeted for many different purposes (internal IV&V application, embedded

software development for internal IV&V testing, flight software development for dynamic IV&V simulation testing and/or NASA customer testing purposes, data processing script etc.).

Software plans at a minimum should address areas below from NASA NPR 7150.2C for a specific software development effort. The NASA IV&V Office of Information Technology (OIT) Lead has institutional authority on all Class F software projects and has joint responsibility on the cybersecurity requirements in section 3.11 per the direction in the Appendix C Requirements Mapping Matrix. NASA NPR 7150.2C refers to this role as the local Chief Information Officer (CIO). The OIT Lead will work with IV&V groups performing development of Class F software to appropriately tailor a software development plan according to Section C.3 Tailoring Guidance.

- Identify the target software classification based on the Appendix D ‘Software Classifications’ defined in NASA NPR 7150.2C and address the key areas based upon an appropriate tailoring of the related NASA NPR 7150.2C. System Development Lifecycle (SDLC) processes and best practices. It is possible that some of the expectations captured in the NASA NPR 7150.2C standard may be addressed through other applicable IV&V center defined processes.
- Software Requirements and Analysis
- Software Design
- Software Implementation
- Software Testing
- Software Configuration Management
- Software Quality Assurance

## Metrics

Metrics that should be captured will be documented in each Software Development Plan (SDP). The SDP is developed and maintained by the SDL.

## Records

Records that should be captured will be documented in each Software Development Plan (SDP).

## Definitions and Acronyms

Official NASA IV&V roles and terms are defined in the [Quality Manual](#). Specialized definitions identified in this SLP are defined below.

- **Software Development Plan**
  - Document that details the overall approach to developing software relative to the NASA NPR 7150.2C software engineering requirements.

- Document is written and maintained by Software Development Lead.
- Software Development Lead**
  - Individual responsible for the overall software development effort.

## Acronyms

|     |                                  |
|-----|----------------------------------|
| OIT | Office of Information Technology |
| SDL | Software Development Lead        |
| SDP | Software Development Plan        |

## References

| REFERENCES  |   |
|---|---|
| Document ID/Link  | Title   |
| <a href="#">NPR 7150.2C</a>   | NASA Software Engineering Requirements                |
| <a href="#">NASA-HDBK-2203</a>  | NASA Software Engineering and Assurance Handbook      |
| <a href="https://software.gsfc.nasa.gov/PAL">https://software.gsfc.nasa.gov/PAL</a> | GSFC Software Engineering Process Asset Library (PAL) |

## Version History

| VERSION HISTORY |                       |                      |            |                |
|-----------------|-----------------------|----------------------|------------|----------------|
| Version         | Description of Change | Rationale for Change | Author     | Effective Date |
| Basic           | Initial Release       |                      | Jerry Sims | 11/25/2020     |